Wisconsin Power and Light Co.
An Alliant Energy Company

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November 23, 2021

FILED ELECTRONICALLY

Mr. Martin R. Day
Division of Energy Regulation and Analysis
Public Service Commission of Wisconsin
P.O. Box 7854
Madison, WI 53707-7854

RE: Updated Response to Strategic Energy Assessment for January 1, 2022 through December 31, 2028 **Docket No: 5-ES-111**

Dear Mr. Day:

Pursuant to discussions with Public Service Commission of Wisconsin Staff regarding Wisconsin Power and Light Company's ("WPL") November 12, 2021 responses to the Commission's data request for the 2022-2028 SEA, attached please find WPL's revised schedules, supplemental responses, and narrative responses. WPL has removed the confidentiality designations in Schedule 3 and in its supplemental response regarding carbon reduction activities. WPL has also updated Schedule 3 to include WPL's planned solar generation, which was inadvertently omitted in the initial filing. The remainder of WPL's responses remain the same as the November 12, 2021 version.

Should you have any questions, please contact Fan Jiang, Senior Planning Consultant, at 608-458-3112.

Sincerely,

/s/ Lissa Koop
Corporate Counsel
Alliant Energy Corporate Services

Assessment of Electric Demand and Supply Conditions - Historic

Instructions

SEA data collection pursuant to Wis. Admin. Code § PSC 111.11(2)(a)1-6, PSC 111.13, PSC 111.21(1)(b)-(f), PSC 111.23(2)(a)-(b), and PSC 111.41.
IOUs should include wholesale requirements customers' data.
Data for 2021 should represent January 1, 2021 to September 30, 2021.
Data for forecast years (2022-2028) should be entered on Schedule 2.
2019 data from the previous SEA represent 9 months of data and must be revised to reflect 12 months of data.
All 2020 data from the previous SEA represented a 12-month forecast and must be revised to reflect 12 months of actuals.
All 2021 data from the previous SEA represent 12-month forecast and must be revised to reflect 9 months of actuals (January 1 to September 30).
Peak load is defined as the Wisconsin load the provider would have served before implementing PSC 111.11(2a), items 2 through 6.
For Direct Load Control and Interruptible Load, report values for what was implemented or scheduled.
For Additional demand and additional supply, add a brief description.
For owned capacity, and merchant plant capacity under contract, include capacity located in state or used for Wisconsin customers.

Wisconsin Peak Electric Demand (MW)	2019	2020	2021
Date of Peak Load	7/19/2019	8/27/2020	7/6/2021
Peak Load MW, non-coincident	2682.0	2609.0	2679.7
Direct Load Control Program			
Interruptible load			
Capacity sales, including reserves			
Capacity purchases, including reserves			
Transmission loss responsibility associated with purchases			
Additional demand factor (type description here)			
Adjusted electric demand			
Electric Power Supply (MW)			
Owned generating capacity	3034.0	3472.3	3501.8
Merchant power plant capacity under contract			
Unit retirements			
New: owned or leased capacity additions			
Capacity changes at existing units			
Capacity purchases without reserves, system basis			
Capacity purchases without reserves, unit basis	87.8	-93	-124
Transmission loss responsibility associated with purchases			
Capacity sales without reserves, system basis			
Capacity Sales without reserves, unit basis			
Additional supply factor--scheduled outages			
Additional supply factor (type description here)			
Electric Power Supply	3121.8	3379.4	3377.8
Reserve Margin	16.4%	29.5%	26.0%
Resources Not Dispatched (MW)			
Direct Load Control Program			
Interruptible load	177.9	175.0	231.6
Additional demand factors (type description here)			
Transmission : Firm Interface Capacity Counted for Reserves (MW)			
Resources using MINN/WUMS interface			
Resources using CE/WUMS interface			
Resources using Upper Michigan\Wisconsin interface			
Total			

Assessment of Electric Demand and Supply Conditions - Forecast

Based on MISO LSE Balance Sheet and PSC Resource Adequacy Reporting in 5-EI dockets
The worksheet below remains consistent with Schedule 2 in previous SEAs. Complete the new supporting worksheets in Schedule 2A-2D and ensure the information is consistent with the information on this worksheet.
Provide the most up-to-date data available at the time of response, including any updates from similar data filed in the spring OMS/MISO surveys.
Provide Wisconsin-specific data.
SEA data collection pursuant to Wis. Admin. Code. § PSC 111.21(1)(b) through (e), PSC 111.11(2)(a)1-3,5-6.
IOUs should include wholesale requirements customers' data.
EE and Smart Energy Program not eligible for capacity in the PRA.

	2021*	2021*	2022	2022	2023	2023	2024	2024	2025	2025	2026	2026	2027	2027	2028	2028
All Asset Owners for WEPM	**ICAP**	**UCAP**	**ICAP**	**UCAP**	**ICAP**	**UCAP**	**ICAP**	**UCAP**	**ICAP**	**UCAP**	**ICAP**	**UCAP**	**ICAP**	**UCAP**	**ICAP**	**UCAP**
Capacity (MW)																
High Certainty Resources (Existing Resource)																
Low Certainty Resources (Existing Resource)																
Behind the Meter (Existing Resource)																
DRR plus Registered DSM (Existing Resource)																
New Capacity DPP Signed GIA (New Resource)[1]																
New Capacity DPP GIA Phase (New Resource)																
New Capacity DPP Phase 3 (New Resource)																
New Capacity DPP Phase 2 (New Resource)																
New Capacity DPP Phase 1 / Not Started (New Resource)																
New Capacity Not in Interconnection Queue (New Resource)[2]																
New BTMG / NEW DR (New Resource)																
RZ Internal Transfer- In (ZRC)																
RZ Internal Transfer- Out (ZRC)																
External Resource Imports (Existing Resource)																
Total Committed Net Capacity (MW) Includes DPP Signed GIA																
Total Potential Net Capacity (MW)																
Demand (MW)[3]																
Non-Coincident Peak gross of DR			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Full Responsibility Transaction (FRT)			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zonal Coincident Factor			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Coincident LSE Peak with Zonal Peak gross of DR			-	-	-	-	-	-	-	-	-	-	-	-	-	-
MISO Coincident Factor			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Coincident LSE Peak to MISO Peak gross of DR																
Reserve Requirement (MW)																
Local Clearing Requirement[4]			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Planning Reserve Requirement																
PRMR																
UCAP to ICAP Conversion			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Reserve Margin (MW), as submitted with Signed GIA																
Resources above Local Clearing Requirement			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Resource above Planning Reserve Requirement																
Reserve Margin (MW), as submitted With Total Potential Resources																
Resources above Local Clearing Requirement			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Resource above Planning Reserve Requirement																

*Not provided by OMS-MISO survey balance sheet

OMS - Existing Resources

MP	Asset Owner	LBA	Type	Resource Name	Fuel Type	Resource Type	Resource Zone	UCAP MW	2021 ICAP*	UCAP*	Factor	2022 ICAP	UCAP	Factor	2023 ICAP	UCAP	Factor	2024 ICAP	UCAP	Factor	2025 ICAP	UCAP	Factor	2026 ICAP	UCAP	Factor	2027 ICAP	UCAP	Factor	2028 ICAP	UCAP	Factor
ALTM	AWPL	ALTE																														
ALTM	AWPL	ALTE																														
ALTM	AWPL	ALTE																														
ALTM	AWPL	ALTE																														
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ALTM	AWPL	ALTE																														
ALTM	AWPL	ALTE																														

Note: Data in the red outline boxes reflect changes since OMS-MISO survey.

*Not provided by OMS-MISO survey balance sheet

OMS - New Resources

MP	Asset Owner	Project Name	Resource Type	UCAP MW (Calculated)	ICAP MW	Year	LBA	DPP Study Phase	Pooled EFORD % (Calculated)	Comments
ALTM	AWPL									
ALTM	AWPL									
ALTM	AWPL									
ALTM	AWPL									
ALTM	AWPL									
ALTM	AWPL									
ALTM	AWPL									
ALTM	AWPL									
ALTM	AWPL									
ALTM	AWPL									
ALTM	AWPL									
ALTM	AWPL									

Note: Data in the red outline boxes reflect changes since OMS-MISO survey.

OMS - ZRC Transactions

Contract Name	LBA	Seller MP	Seller AO	RZ Source	Buyer MP	Buyer AO	RZ Sink	Planning Resource Name	Fuel Type	Transfer Type	Existing	ZRC (UCAP)	Seller LBA	ZRC (ICAP)	2021 ICAP	UCAP	Factor	2022 ICAP	UCAP	Factor	2023 ICAP	UCAP	Factor	2024 ICAP	UCAP	Factor	2025 ICAP	UCAP	Factor	2026 ICAP	UCAP	Factor	2027 ICAP	UCAP	Factor	2028 ICAP	UCAP	Factor	Comments
																		81	81	H	81	81	H	81	81	H	81	81	H	81	81	H	81	81	H	81	81	H	
																		83.3	82.1	H	83.3	82.1	H	83.3	82.1	H	83.3	82.1	H	83.3	82.1	H	83.3	82.1	H	83.3	82.1	H	
																		21.4	21.4	H	21.4	21.4	H	21.4	21.4	H	21.4	21.4	H	21.4	21.4	H	21.4	21.4	H	21.4	21.4	H	
																		6.9	6.9	H	6.9	6.9	H	6.9	6.9	H	6.9	6.9	H	6.9	6.9	H	6.9	6.9	H	6.9	6.9	H	
																		3.6	3.6	H	3.6	3.6	H	3.6	3.6	H	3.6	3.6	H	3.6	3.6	H	3.6	3.6	H	7.2	7.2	H	Forward PPA with WPPI ends 2028. WPL owns the shares.
																		10.3	10.3	H	10.3	10.3	H	10.3	10.3	H	10.3	10.3	H	10.3	10.3	H	10.3	10.3	H	10.3	10.3	H	
																		0.3	0.3	H	0.3	0.3	H	0.3	0.3	H	0.3	0.3	H	0.3	0.3	H	0.3	0.3	H	0.0	0.0	H	

OMS - Full Responsibility Transactions																																
Contract Name	Buyer MP	Buyer Asset Owner	RZ Source	Seller MP	Seller Asset Owner	FRT MW	LBA	2021 ICAP	UCAP	Factor	2022 ICAP	UCAP	Factor	2023 ICAP	UCAP	Factor	2024 ICAP	UCAP	Factor	2025 ICAP	UCAP	Factor	2026 ICAP	UCAP	Factor	2027 ICAP	UCAP	Factor	2028 ICAP	UCAP	Factor	Comments

N/A - WPL has no full responsibility transactions

Assessment of Annual Energy Supply Conditions

Instructions

Include data through September 30, 2021

IOUs are to include wholesale requirements customers' data.

SEA data collection pursuant to Wis. Admin. Code. § PSC 111.07

2019 data from the previous SEA represent 9 months of data and must be revised to reflect 12 months of data.

All 2020 data from the previous SEA represented a 12-month forecast and must be revised to reflect 12 months of actuals.

All 2021 data from the previous SEA represent 12-month forecast and must be revised to reflect 9 months of actuals (January 1 to September 30).

All 2022 through 2026 data from the previous SEA represent 12-month forecasts and must be reviewed and revised to reflect current forecasts for these years.

Nothing on this form is expected to be confidential

	History		Current Year	Forecast						
	2019	2020	2021 Jan-Sep	2022	2023	2024	2025	2026	2027	2028
Owned Generating Energy Output (MWh)										
Coal	4,173,186	3,835,560	4,593,383	6,558,479	4,109,125	1,981,135	-	-	-	-
Nuclear										
Natural Gas	4,697,573	5,144,067	4,679,992	7,915,890	7,702,756	7,097,127	6,908,539	7,490,268	7,490,268	7,490,268
Wind	836,124	1,028,979	795,212	1,466,353	1,467,854	1,472,404	1,465,418	1,465,418	1,465,418	1,465,418
Hydroelectric	227,622	242,130	167,890	198,421	198,421	198,862	198,421	198,422	198,422	198,422
Solar	-	-	4,799	134,599	1,018,992	2,397,201	2,979,729	2,979,729	2,979,729	2,979,729
Subtotal	9,934,505	10,250,736	10,241,276	16,273,743	14,497,149	13,146,730	11,552,108	12,133,837	12,133,837	12,133,837
Merchant Power Plant Energy Output under Contract (MWh)										
Coal										
Natural Gas	11,224	11,266	25,443	1,109	1,109	544	1,109	1,109	1,109	1,109
Wind	669,456	1,399,011	928,584	1,491,817	1,521,375	1,524,898	1,512,427	1,510,843	1,510,843	1,510,843
Renewable Biomass or Biogas										
Hydroelectric	121,984	111,845	81,352	108,446	108,446	108,746	108,446	108,446	108,446	108,446
Subtotal	802,664	1,522,122	1,035,379	1,601,372	1,630,931	1,634,189	1,621,983	1,620,398	1,620,398	1,620,398
Total Energy Output	10,737,170	11,772,858	11,276,656	17,875,115	16,128,079	14,780,918	13,174,090	13,754,235	13,754,235	13,754,235

PUBLIC VERSION

Details of Purchases, Sales and Transmission Rights

Instructions:

For signed purchases and sales, which are reported on Schedule 1, provide details including any required transmission rights.
Provide transmission rights information for other capacity resources requiring transmission rights for delivery.
For potential, in progress, or expected, which ARE NOT reported on Schedule 1, provide details including any required transmission rights.
IOUs should include data for all wholesale requirements customers.
May be filed confidentially.
SEA data collection pursuant to Wis. Admin. Code § PSC 111.21(2)(a) 4 and 5 and § PSC 111.23(2) a and b
Report entries chronologically and report multi-year arrangements seperately, in each applicable year.
All 2019 data submitted for previous SEA represented 9 months of data and must be revised to reflect 12 months of data.
All 2020 data submitted in previous SEA represent a 12-month forecast and must be revised to reflect 12 months of actuals.
All 2021 data submitted in previous SEA represented 12-month forecast and must be revised to reflect 9 months of actuals (January 1 to September 30).
All contracts submitted for previous SEA should be reviewed and revised for accuracy.
New contracts must be added.

Purchase, Sale or Generation											Transmission Rights for Delivery of Purchases and Generation								
Contract Type	Year	Type	Counter-party ID	Counter-party Name	Start Date	End Date	Unit/System	Firmness	MW	Fuel Type	EMRIT ID	Name	LSE	FTR Sink	Initial CFTR (MW)	Restricted Nomination (MW)	Unrestricted Nomination (MW)	Allocated (MW)	Notes

PUBLIC VERSION

Assessment of Electric Demand and Supply Conditions Monthly Peak Demand (MW)

Instructions

Include data through September 30, 2021

IOUs are to include wholesale requirements customers' data.

SEA data Collection pursuant to Wis. Admin. Code § PSC 111.11(2)

Peak load is the Wisconsin load the electric provider would have served before implementing § PSC 111.11(2a)2 through 6

All 2019 data submitted for previous SEA represented 9 months of data and must be revised to reflect 12 months of data.

All 2020 data submitted in previous SEA represent a 12-month forecast and must be revised to reflect 12 months of actuals.

All 2021 data submitted in previous SEA represented 12-month forecast and must be revised to reflect 9 months of actuals (January 1 to September 30)

Green-highlighted cells reflect actuals.

Nothing on this form is expected to be confidential

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Historical:												
2019	2,030.9	1,915.0	1,915.0	1,690.2	1,788.7	2,274.0	2,682.0	2,390.8	2,083.5	1,888.7	1,866.8	1,905.3
2020	1,852.2	1,847.0	1,723.8	1,546.5	2,097.7	2,442.1	2,579.5	2,608.5	1,934.0	1,713.6	1,765.6	1,872.8
Forecasted:												
2021	1,903.1	2,028.0	1,794.9	1,704.3	2,062.4	2,640.0	2,680.0	2,658.0	2,118.0	1,989.8	2,046.5	2,150.1
2022	2,152.6	2,106.3	1,996.5	1,846.3	2,079.0	2,536.1	2,744.8	2,660.0	2,479.4	1,999.3	2,057.1	2,161.2
2023	2,162.6	2,116.4	2,006.1	1,854.8	2,087.0	2,544.3	2,752.4	2,667.9	2,487.4	2,007.9	2,066.7	2,171.4
2024	2,175.2	2,123.6	2,018.3	1,866.5	2,097.7	2,554.9	2,763.1	2,678.5	2,498.1	2,019.6	2,079.0	2,184.1
2025	2,188.0	2,142.0	2,030.5	1,878.1	2,108.3	2,565.5	2,773.7	2,689.1	2,508.7	2,031.3	2,091.3	2,197.0
2026	2,200.8	2,154.8	2,042.8	1,889.8	2,118.8	2,576.1	2,784.2	2,699.6	2,519.2	2,043.0	2,103.6	2,209.9
2027	2,213.6	2,167.9	2,055.1	1,901.5	2,129.2	2,586.5	2,794.6	2,709.9	2,529.6	2,054.4	2,115.8	2,222.7
2028	2,226.4	2,175.3	2,067.3	1,913.0	2,139.5	2,596.7	2,804.8	2,720.1	2,539.8	2,065.9	2,128.0	2,235.5

Assessment of Energy Conditions Monthly Energy (MWH)

Instructions

Include data through September 30, 2021

IOUs are to include wholesale requirements customers' data.

Data in this schedule is the Wisconsin load the electric provider would have served before implementing § PSC 111.11(2a)2 through 6.

SEA data collection pursuant to Wis. Admin. Code § PSC 111.07

All 2019 data submitted for previous SEA represented 9 months of data and must be revised to reflect 12 months of data.

All 2020 data submitted in previous SEA represent a 12-month forecast and must be revised to reflect 12 months of actuals.

All 2021 data submitted in previous SEA represented 12-month forecast and must be revised to reflect 9 months of actuals (January 1 to September 30).

Green-highlighted cells reflect actuals.

Nothing on this form is expected to be confidential

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Historical:												
2019	1,191,845	1,080,673	1,112,301	1,003,962	1,021,798	1,095,657	1,392,002	1,246,892	1,103,905	1,066,597	1,087,047	1,116,869
2020	1,139,239	1,066,368	1,062,110	919,268	962,245	1,160,158	1,397,135	1,304,079	1,039,807	1,061,004	1,035,086	1,142,405
Forecasted:												
2021	1,198,322	1,144,706	1,125,302	1,040,772	1,107,500	1,333,498	1,392,170	1,423,992	1,164,041	1,155,470	1,125,948	1,194,026
2022	1,226,506	1,111,197	1,153,442	1,047,229	1,091,980	1,163,868	1,367,508	1,320,591	1,188,501	1,158,281	1,128,591	1,197,483
2023	1,228,775	1,112,769	1,155,379	1,048,488	1,093,620	1,166,020	1,370,619	1,323,510	1,190,331	1,160,228	1,130,560	1,200,002
2024	1,243,636	1,150,374	1,170,365	1,062,491	1,108,484	1,181,383	1,387,605	1,340,547	1,206,294	1,175,902	1,145,379	1,214,953
2025	1,248,617	1,131,171	1,175,038	1,066,640	1,112,870	1,186,179	1,393,408	1,346,253	1,211,180	1,180,647	1,149,979	1,219,679
2026	1,253,753	1,135,798	1,179,846	1,070,928	1,117,429	1,191,046	1,399,286	1,351,934	1,216,161	1,185,425	1,154,666	1,225,031
2027	1,258,959	1,140,466	1,184,716	1,075,334	1,122,036	1,196,013	1,405,171	1,357,731	1,221,212	1,190,318	1,159,451	1,230,190
2028	1,264,261	1,169,436	1,189,752	1,079,858	1,126,820	1,201,091	1,411,531	1,363,606	1,226,406	1,195,397	1,164,380	1,235,524

Unit Retirements, Upgrades, Fuel Switching

Instructions

Provide data for plants expected to be retired, upgraded, or switched to a different fuel by December 2028

Provide information on facilities with 10 MW or more in capacity. This includes facilities where the combined capacity of units to be retired or upgraded is 10 MW or more, even though individual units may have a smaller capacity rating.

SEA data collection pursuant to Wis. Admin. Code § PSC 111.21

Nothing on this form is expected to be confidential

	Name of Facility	Capacity Change	Unit #	Location	Primary Fuel Type	Nameplate Capacity (MW)	Expected Annual Generation (kWh)	Expected Year	Expected CO2 (lbs/kWh)	Nameplate Added Capacity (MW)	Expected Nameplate Capacity (MW)	New Primary Fuel Type
Retirement	Edgewater	-405.7	5	3739 Lakeshore Drive, Sheboygan WI (43.7166971,-87.7089039)	Coal	416.6	**0**	2023	**0**	**0**	**0**	**N/A**
Retirement	Columbia Energy Center	-292.7	1	W8375 Murray Road, Pardeeville WI (43.4858021,-89.4190171)	Coal	303.1	**0**	2024	**0**	**0**	**0**	**N/A**
Retirement	Columbia Energy Center	-291.9	2	W8375 Murray Road, Pardeeville WI (43.4858021,-89.4190171)	Coal	302.1	**0**	2025	**0**	**0**	**0**	**N/A**

New Generating Facilities

Instructions:

Provide data for all new plants expected to commence construction and/or be placed in commercial operation prior to December 31, 2026

Do not enter existing facilities that are switching fuel here; use schedule 6.

SEA data collection pursuant to Wis. Admin. Code § PSC 111.21

In-service date refers to the year the unit or facility is expected to be commerically operational.

Review, revise and add data as appropriate.

Nothing on this form is expected to be confidential

Name of Facility	Unit #	Cost ($/kW)	City (Town)	State	Primary Fuel Type	Summer Net-Rated Capacity MW	Winter Net-Rated Capacity MW	Expected Annual Generation (kWh)	Expected In-Service Year	CO2 (pounds per kWh)
BEAR CREEK SOLAR	1	1637	Lone Rock	WI	Solar	33	4	105120000	2022	0
CRAWFISH RIVER SOLAR	1	1295	Jefferson	WI	Solar	49	6	157680000	2023	0
ONION RIVER SOLAR	1	1295	Cedar Grove	WI	Solar	98	12	315360000	2023	0
WOOD COUNTY SOLAR	1	1644	Port Edwards	WI	Solar	98	12	315360000	2022	0
GRANT COUNTY SOLAR	1	1245	Potosi	WI	Solar	130	16	420480000	2023	0
NORTH ROCK SOLAR	1	1666	Edgerton	WI	Solar	33	4	105120000	2023	0
ALBANY SOLAR	1	1554	Albany	WI	Solar	33	4	105120000	2023	0
BEAVER DAM SOLAR	1	1483	Beaver Dam	WI	Solar	33	4	105120000	2023	0
CASSVILLE SOLAR	1	1539	Cassville	WI	Solar	33	4	105120000	2023	0
PADDOCK SOLAR	1	1426	Beloit	WI	Solar	42	5	136656000	2023	0
SPRINGFIELD SOLAR	1	1395	Springfield	WI	Solar	65	8	210240000	2023	0
WAUTOMA SOLAR	1	1384	Wautoma	WI	Solar	64	8	208137600	2023	0

PUBLIC VERSION

Existing Generating Facilities

Instructions

Enter information in separate rows for all utility generating facilities. Consistent with PSC annual report requirements, record separate rows by unit for large plants and record small plants in a single-row aggregate, not by unit.
For plants equipped with combinations of diferent generating fuels, report information for each fuel in a separate row.
Only report data for plants that were in service for all, or a portion, of 2020. Include all facilities operating in 2020 even if Schedule 7 indicates they will be retired in future years.
New facilities that will not begin operating until future years do not need to be entered here and can be documented in Schedule 8.
Enter Latitude, Longitude in Decimal Degrees, with a comma separating the two values.
When applicable, information on capacity, generation and cost of plant should be consistent with the information reported for generating plant statistics in PSC annual reports.
When applicable, information on CO2 emissions should be consistent with that reported in other state and federal sources (such as WI DNR and EIA). Explain any complications or inconsistencies in the notes column.
If net peak demand for 60 minutes is not available, provide data that is available, and specify the period in the notes column.

Name of Facility	Unit #	1st Year Commercial Operation	Street Address	City	State	Latitude, Longitude	Primary Fuel Type	Total Cost of Plant-2019	Total Cost of Plant-2020	Nameplate Capacity (MW)	Summer Net-Rated Capacity MW	Winter Net-Rated Capacity MW	Annual Net Generation, Exclusive of Plant Use (KWh) - 2019
Columbia Energy Center	1	1975	W8375 Murray Road	Pardeeville	WI	43.4858021,-89.4190171	Coal	$ 348,938,262.00	$ 351,649,218.49	303.1	292.7	292.7	1,336,203,000
Columbia Energy Center	1	1975	W8375 Murray Road	Pardeeville	WI	43.4858021,-89.4190171	Fuel Oil	$ 348,938,262.00	$ 351,649,218.49	303.1	292.7	292.7	1,336,203,000
Columbia Energy Center	2	1978	W8375 Murray Road	Pardeeville	WI	43.4858021,-89.4190171	Coal	$ 428,077,562.00	$ 434,043,640.94	302.1	291.9	291.9	1,413,147,000
Columbia Energy Center	2	1978	W8375 Murray Road	Pardeeville	WI	43.4858021,-89.4190171	Fuel Oil	$ 428,077,562.00	$ 434,043,640.94	302.1	291.9	291.9	1,413,147,000
Edgewater	5	1985	3739 Lakeshore Drive	Sheboygan	WI	43.7166971,-87.7089039	Coal	$ 819,493,624.00	$ 814,346,109.00	416.6	405.7	406.5	1,423,837,000
Edgewater	5	1985	3739 Lakeshore Drive	Sheboygan	WI	43.7166971,-87.7089039	Fuel Oil	$ 819,493,624.00	$ 814,346,109.00	416.6	405.7	406.5	1,423,837,000
Bent Tree Wind	1	2011	280th Ave	Hartland	MN	43.763587,-93.474395	Wind	$ 500,451,002.00	$ 499,294,822.00	201.3	201.3	201.3	511,479,000
Cedar Ridge Wind Farm	1	2008	W2862 Maple Rd	Eden	WI	43.723729,-88.301226	Wind	$ 165,308,760.00	$ 165,238,120.00	67.65	67.65	67.65	176,428,000
Forward Wind	1	2008	N11938 Center Dr	Brownsville	WI	43.62935,-88.478169	Wind	$ 109,706,255.00	$ 109,851,085.00	58.72	58.72	58.72	140,879,000
Kossuth Wind	1	2020	1850 Michigan Ave	Humboldt	IA	42.782221,-94.202775	Wind	$ -	$ 244,047,475.00	152.2	152.2	152.2	
Prairie du Sac Hydroelectric Plant	1	1915	S9270A Dam Road	Prairie du Sac	WI	43.3097696,-89.7305693	Hydro	$ 50,837,001.00	$ 109,413,675.00	31.4	31.4	31.4	184,907,000
Neenah	1	2000	200 County Road CB	Neenah	WI	44.1941581,-88.5057714	Natural Gas	$ 57,994,440.00	$ 58,579,116.48	185.5	185.5	185.5	134,209,000
Neenah	2	2000	200 County Road CB	Neenah	WI	44.1941581,-88.5057714	Natural Gas	$ 57,994,440.00	$ 58,579,116.48	185.5	185.5	185.5	165,383,000
Riverside Energy Center	1	2004	1401 W B-R Townline Road	Beloit	WI	42.5837112,-89.0355173	Natural Gas	$ 173,830,433.00	$ 175,145,338.12	198.9	198.9	198.9	1,201,063,000
Riverside Energy Center	2	2004	1401 W B-R Townline Road	Beloit	WI	42.5837112,-89.0355173	Natural Gas	$ 178,589,793.00	$ 180,167,446.68	198.9	198.9	198.9	1,179,753,000
Riverside Energy Center	3	2004	1401 W B-R Townline Road	Beloit	WI	42.5837112,-89.0355173	Natural Gas	$ 220,101,466.00	$ 220,598,655.05	277.1	277.1	277.1	1,666,089,000
Rock River Units (retired 2020)	3	1967	935 W B R Townline Rd	Beloit	WI	42.583,-89.0259	Natural Gas	$ 4,045,574.00	$ -	37.5	37.5	37.5	(367,000)
Rock River Units (retired 2020)	4	1968	935 W B R Townline Rd	Beloit	WI	42.583,-89.0259	Natural Gas	$ 2,441,559.00	$ -	18	18	18	31,000
Rock River Units (retired 2020)	5	1972	935 W B R Townline Rd	Beloit	WI	42.583,-89.0259	Natural Gas	$ 7,160,750.00	$ -	56.7	56.7	56.7	3,217,000
Rock River Units (retired 2020)	6	1972	935 W B R Townline Rd	Beloit	WI	42.583,-89.0259	Natural Gas	$ 6,987,432.00	$ -	56.7	56.7	56.7	(108,000)
Sheboygan Energy Center	1	2004	N5787 Bridgewood Road	Plymouth	WI	43.7515349,-87.877996	Natural Gas	$ 63,793,114.00	$ 65,022,462.39	173.4	173.4	173.4	162,354,000
Sheboygan Energy Center	2	2004	N5787 Bridgewood Road	Plymouth	WI	43.7515349,-87.877996	Natural Gas	$ 63,793,114.00	$ 65,022,462.39	173.4	173.4	173.4	174,891,000
Sheepskin (retired 2020)	1	1971	935 W B R Townline Rd	Beloit	WI	42.583226,-89.027934	Natural Gas	$ 6,626,340.00	$ 17,831.00	41.7	35.7	39.6	565
South Fond du Lac	2	1994	5356 River Road	Fond du Lac	WI	43.7358459,-88.4935335	Natural Gas	$ 31,068,205.00	$ 31,192,597.04	95.4	95.4	95.4	5,177,000
South Fond du Lac	2	1994	5356 River Road	Fond du Lac	WI	43.7358459,-88.4935335	Fuel Oil	$ 31,068,205.00	$ 31,192,597.04	95.4	95.4	95.4	5,177,000
South Fond du Lac	3	1994	5356 River Road	Fond du Lac	WI	43.7358459,-88.4935335	Natural Gas	$ 35,892,647.00	$ 36,017,038.88	95.4	95.4	95.4	5,316,000
South Fond du Lac	3	1994	5356 River Road	Fond du Lac	WI	43.7358459,-88.4935335	Fuel Oil	$ 35,892,647.00	$ 36,017,038.88	95.4	95.4	95.4	5,316,000
West Riverside Energy Center	1	2020	4201 S Walters Rd	Beloit	WI	42.58152745,-89.0405571	Natural Gas		$ 685,164,164.93	213.8	213.8	213.8	
West Riverside Energy Center	2	2020	4201 S Walters Rd	Beloit	WI	42.58152745,-89.0405571	Natural Gas		$ 546,557.44	213.8	213.8	213.8	
West Riverside Energy Center	3	2020	4201 S Walters Rd	Beloit	WI	42.58152745,-89.0405571	Natural Gas		$ 467,206.31	236.3	236.3	236.3	

PUBLIC VERSION

Annual Net Generation, Exclusive of Plant Use (KWh) - 2020	Fuel Type Units (Coal-tons/Oil-barrel/Gas-mcf/etc.)	Quantity (units of Fuel Burned)- 2019	Quantity (units of Fuel Burned)- 2020	CO2 (pounds per kWh)- 2019	CO2 (pounds per kWh)- 2020	Net Peak Demand on Plant - MW (60 minutes)	Plant Hours to Connected to Load- 2019	Plant Hours Connected to Load- 2020	Net Continuous Plant Capability (MW)	Notes
1,580,339,888	Coal - tons	805,628	996,544	2.371	2.3863	309	8,679	8,581	297	Only reporting WPL Share of 53.5%. Summer Net-Rated Capacity = UCAP Value (MW)
1,580,339,888	Oil - barrel	1,642	1,018	2.371	2.3863	309	8,679	8,581	297	Only reporting WPL Share of 53.5%. Summer Net-Rated Capacity = UCAP Value (MW)
1,163,403,641	Coal - tons	848,870	720,258	2.3403	2.3486	307	8,679	6,279	296.25	Only reporting WPL Share of 53.5%. Summer Net-Rated Capacity = UCAP Value (MW)
1,163,403,641	Oil - barrel	1,618	2,590	2.3403	2.3486	307	8,679	6,279	296.25	Only reporting WPL Share of 53.5%. Summer Net-Rated Capacity = UCAP Value (MW)
1,091,816,000	Coal - tons	919,515	686,879	2.3291	2.3291	417	6,766	5,375	401	
1,091,816,000	Oil - barrel	5,978	7,439	2.3291	2.3291	417	6,766	5,375	401	
520,370,000						200	7,484	7,422		
184,025,000						67	7,159	7,371		
144,362,000						59	7,712	7,914		
180,221,000						150		2,702		
178,749,000						29	8,752	8,661	29	
214,725,182	Gas - mcf	1,488,148	2,221,054	1.3201	1.3252	179	1,108	1,709	157	
198,170,818	Gas - mcf	1,814,720	2,111,644	1.299	1.3062	177	1,276	1,556	154	
766,569,000	Gas - mcf	13,320,474	8,207,335	0.8404	0.8354	184	7,802	4,965	170	Riverside CC Unit - Combustion Turbine #1
593,536,000	Gas - mcf	13,165,005	6,408,643	0.8404	0.8354	184	7,704	3,881	170	Riverside CC Unit - Combustion Turbine #2
946,300,000	Gas - mcf	3,039,006	1,771,208	0.8404	0.8354	267	7,864	4,935	266	Riverside CC Unit - Heat Recovery Steam Generator
(269,400)	Gas - mcf	1,733	513	1.6014	2.2753	19	7	2	28	Retired in 2020
3,000	Gas - mcf	687	249	1.6014	2.2753	11	7	3	19	Retired in 2020 (AKA Turtle)
(1,880)	Gas - mcf	45,821	1,103	1.6014	2.2753	19	138	4	70	Retired in 2020
(45,000)	Gas - mcf	1	1	1.6014	2.2753	0	-	-	70	Retired in 2020
311,132,000	Gas - mcf	1,698,058	3,209,251	1.2998	1.3001	183	1,214	2,248	147	
269,384,000	Gas - mcf	1,865,143	2,725,544	1.2999	1.3052	183	1,330	1,961	147	
(31,000)	Gas - mcf	11,478	324	1.6014	2.2753	11	46	2	40	Retired in 2020
6,403,000	Gas - mcf	74,732	103,826	2.8378	2.0097	84	168	169	85	
6,403,000	Oil - barrel	3,067	-	2.8378	2.0097	84	168	169	85	
6,892,000	Gas - mcf	83,351	111,748	2.4135	1.9946	85	150	177	85	
6,892,000	Oil - barrel	1,653	58	2.4135	1.9946	85	150	177	85	
518,742,000	Gas - mcf		4,728,738		1.0702	222		3,446	206.55	New CC Unit - Test burns without Heat Recovery Steam Generator increased the average CO2/kWh
654,679,000	Gas - mcf		6,381,881		1.0702	222		4,128	206.55	New CC Unit - Test burns without Heat Recovery Steam Generator increased the average CO2/kWh
657,878,000	Gas - mcf					241		3,723	217	New CC Unit - Test burns without Heat Recovery Steam Generator increased the average CO2/kWh

Economic Data

Instructions

SEA data collection pursuant to Wis. Admin. Code § PSC 111.31(1)

Include data through September 30, 2021

Report data on this page in $/MWh. Data should reflect fuel only.

Forecast data may be either developed from public sources, or internal and proprietary. Regardless of forecast method, figures should be developed in a manner consistent with historical figures.

All 2019 data submitted for previous SEA represented 9 months of data and must be revised to reflect 12 months of data.

All 2020 data submitted in previous SEA represent a 12-month forecast and must be revised to reflect 12 months of actuals.

All 2021 data submitted in previous SEA represented 12-month forecast and must be revised to reflect 9 months of actuals (January 1 to September 30).

May be filed confidentially.

	Average Energy Production Cost ($/MWh)									
	Actual			Forecast						
Type of Existing Unit	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
Biomass Wood										
Coal Fired										
Natural Gas Combined Cycle										
Natural Gas Simple Cycle										
Nuclear										
Diesel										

Net Generation, KWh FERC Form 1 pp. 402-403.8 Line 12
Fuel Costs $, FERC Form 1 pp. 402-3 Line 20

Energy Efficiency Data

Instructions:
SEA data collection pursuant to Wis. Admin. Code § PSC 111.07.
Include data through September 30, 2021
Report all data in dollars.
Upload to ERF a comprehensive description of all planned activities to discourgage ineffective and excessive electric power use.
Nothing on this form is expected to be confidential

		Actual		**Actual or Forecast**	**Forecast**							
Item	**Notes**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	
Act 141 Dollars Contributed to Focus on Energy	#1	$13,033,770	$13,441,659	$13,648,293	$13,868,000	$14,068,000	$14,198,000	$14,198,000	$14,198,000	$14,198,000	$14,198,000	
Utility Energy Efficiency Activity												
Act 141 dollars retained by electric provider	#2											
Customer Service Conservation dollars	#3	$1,130,000	$1,130,000	$1,265,231	$1,265,231	$1,265,231	$1,265,231	$1,265,231	$1,265,231	$1,265,231	$1,265,231	*Training, Marketing, Outeach, and Education
Additional conservation and efficiency dollars	#4	$605,000	$685,000	$709,200	$1,013,203	$830,000	$830,000	$830,000	$830,000	$830,000	$830,000	*SENSE WHOLE HOME MONITOR PROGRAM - ENHANCED LOW-INCOME WEATHERIZATION PROGRAM
Total Utility Spending (#2, #3, and #4 only)		$1,735,000	$1,815,000	$1,974,431	$2,278,434	$2,095,231	$2,095,231	$2,095,231	$2,095,231	$2,095,231	$2,095,231	
Energy Savings (kWh) (Funded with #2, #3 and #4 only)	#5											
Demand Savings (kW) (Funded with #2 and/or #4 only)	#5											

Notes
#1: For investor-owned utilities, report actual contributions and projections based on anticipated trends in utility operating revenues. For municipal electric utilities and electric co-operatives that chose to contribute to Focus on Energy, contributions should be approximately $8/meter.
#2: For municipal utilities and retail cooperatives, these are dollars to provide commitment to community programs under 2005 Wisconsin Act 141 (Act 141). Only report dollars for energy efficiency and low-income weatherization. For investor-owned utilities, thise are dollars to for large energy
#3: Applicable only for class A investor-owned utilities (see Commission's August 17, 2000 Order in docket 05-BU-100).
#4: These are dollars to provide energy efficiency programs that are in addition to those required under Act 141. It includes voluntary expenditures on utility-administered programs, voluntary Focus on Energy contributions and dollars for ordered programs.
#5: Energy and demand savings to be reported are only those savings resulting from expenditures reported on this form. Reported figures should reflect only voluntary utility programs funded by #2 and #4 on this form.

New Transmission Lines

Instructions:

Provide data on all transmission construction expected to begin by December 31, 2028

Provide data on all lines with a nominal voltage greater than 69 kV, including upgrades and rebuilds of lines with a current nominal voltage less than 100 kV.

Provide data on all lines regardless of CPCN filing status.

For any application that DOES NOT have a CPCN application filed with the Commission OR which requires a new right-of-way, provide detaled information and any additional notes on the transmission corridors in the "Detail" column on the right.

SEA data collection pursuant to Wis. Admin. Code § PSC 111.43(1)(a) through (e).

*Under **Add a New Transmission Line** , enter the endpoints (substations) for the new line. Click "Add to List". Repeat the process for each new line. Once a line is added, fill in the blank boxes.*

For double circuit lines, enter each line seperately. For example, if a double circuit has voltages of 345 and 115, do not enter 345/115. When entering the second line of a double circuit, add a "(2)" after the endpoint in "Endpoint 2"

For lines with a cost estimate range, enter only the nominal cost estimate.

Estimated Nominal Cost is the sum of cost of the transmission line and associated substation modifications.

If the expected construction is in progress, enter the date the construction began.

Nothing on this form is expected to be confidential.

Endpoint 1 (Substation Name)	Endpoint 2 (Substation Name)	Midpoint Connections (if any)	Nominal Operating Voltage (kV)	Nominal Construction Voltage (kV)	Estimated or Actual Total Mileage	Estimated Nominal Cost ($)	Expected Construction Start Mn/Yr	Expected In-Service Date Mn/Yr	Required Substation Modifications	Detail

Environmental Compliance

Instructions:

In addition to this form, upload to ERF a detailed narrative description of the potential impacts anticipated for your organization to meet each of the Environmental Compliance rules, and any forthcoming environmental regulations.

Provide capital plan excerpts specific to the Environmental Compliance rule. When the document is uploaded to ERF, enter the ERF Reference Number in the box.

Include all planned capital expenditures for compliance costs for the next seven years

Under Primary Compliance Rule, select "N/A – Co-ownership" from the drop down list for plants co-owned by the utility, but where reporting is the responsibility of a different entity.

If more than one Type of Emission Control is used, click on "Notes" and add that information to the text box.

May be filed confidentially.

Unit Name	Primary Compliance Rule	Secondary Compliance Rule	Estimated Forecast Costs	Amount Spent To-Date	Total Estimated Costs	Type of Emission Control	Project Status	Confidential Status (Y/N)	PSC Ref # (if applicable)
Columbia Units 1 and 2	Coal Combustion Residuals Rule	Effluent Limitations Guidelines	16,100,000	3,100,000	19,200,000	ash handling conversion	in-progress	N	
Columbia Units 1 and 2	Coal Combustion Residuals Rule		TBD	486,000	28M-46M	ash pond closure	in-progress	N	
Columbia Unit 2	WPL Consent Decree	Cross State Air Pollution Rule	2,000,000	800,000	2,800,000	nitrogen oxides (NOx) control	in-progress	N	

Instructions
- Type company name into the light green box
- Scroll down to enter information for each year requested: 2019, 2020, and 2021
- Data entered for 2019 and 2020 shold represent twelve months of actuals. For 2021, report actual figures through September 30
- Provide aggregate data by DER and resource type, broken into the separate customer classes as labeled.
- "Installed capacity (kW)" and "Total MW" means the total capacity of DER installations per category, technology, and all installations, less retirements or cessations of self-supply
- Provide installed capacity/total MW in both AC and DC. If data is limited or unavailable for one metric, describe the limitations in the Notes column.
- For battery storage systems, report installed capacity/total MW as peak kW discharge.
- "Installation Count" means the number of DER installations per category, in-service and operating.
-"Utility Purchased (kWh)" means the total kWh purchased by the utility from DERs. Do not report energy consumption offset through net metering or net energy billing.
-"Utility Purchased ($)" means the total dollar value paid by the utility for purchases from DERs. Do not report energy consumption offset through net metering or net energy billing.
-For municipal utilities only, enter yes under "Reported on E-16?" column IF the resource was reported in the new annual report format implemented in 2015.
-Size categories and technology types are labelled in the boxes on the right.
-May be filed confidentially

Size Categories	kW/MW
1	0 - 20 kW
2	>20 - 200 KW
3	>200kW - 1 MW
4	>1 - 15 MW
5	>15 MW

Year: 2019

Company Name

Wisconsin Power & Light

DER Types
Solar PV
Wind
Solar PV + Storage
Wind + Storage
Microturbine
Fuel Cell CHP
Fuel Cell Electric
Internal Combustion
Hydro
Gas Turbine
Battery Storage
Demand Response
Biodigesters
Other

**Only Include DR not registered with MISO

Residential

Type	Size Category	Installation Count	Installed Capacity (kW) (DC)	Installed Capacity (kW) (AC)	Utility Purchased (kWh)	Utility Purchased ($)	Reported on E-16	Notes:

Commercial

*Include any Qualifying Facilities (PURPA)

Industrial

Type	Size Category	# of Installations	Total MW (DC)	Total MW (AC)	Utility Purchased kWh	Utility Purchased $	Reported in E-16	Notes:

PUBLIC VERSION

*Include any Qualifying Facilities (PURPA)

Cooperative								
Type	Size Category	# of Installations	Total MW (DC)	Total MW (AC)	Utility Purchased kWh	Utility Purchased $	Reported in E-16	Notes:

*Include any Qualifying Facilities (PURPA)

Independent Power Producer								
Type	Size Category	# of Installations	Total MW (DC)	Total MW (AC)	Utility Purchased kWh	Utility Purchased $	Reported in E-16	Notes:

*Include any Qualifying Facilities (PURPA)

Year: 2020

Company Name

Wisconsin Power & Light

Residential								
Type	Size Category	Installation Count	Installed Capacity (kW) (DC)	Installed Capacity (kW) (AC)	Utility Purchased (kWh)	Utility Purchased ($)	Reported on E-16	Notes:

Commercial

Type	Size Category	# of Installations	Total MW (DC)	Total MW (AC)	Utility Purchased kWh	Utility Purchased $	Reported in E-16	Notes:

*Include any Qualifying Facilities (PURPA)

Industrial

*Include any Qualifying Facilities (PURPA)

Cooperative

Type	Size Category	# of Installations	Total MW (DC)	Total MW (AC)	Utility Purchased kWh	Utility Purchased $	Reported in E-16	Notes:

*Include any Qualifying Facilities (PURPA)

Independent Power Producer

Type	Size Category	# of Installations	Total MW (DC)	Total MW (AC)	Utility Purchased kWh	Utility Purchased $	Reported in E-16	Notes:

*Include any Qualifying Facilities (PURPA)

Year: 2021

Company Name

Wisconsin Power & Light

Residential

Type	Size Category	Installation Count	Installed Capacity (kW) (DC)	Installed Capacity (kW) (AC)	Utility Purchased (kWh)	Utility Purchased ($)	Reported on E-16	Notes:

Commercial

Type	Size Category	# of Installations	Total MW (DC)	Total MW (AC)	Utility Purchased kWh	Utility Purchased $	Reported in E-16	Notes:

*Include any Qualifying Facilities (PURPA)

Industrial

Type	Size Category	# of Installations	Total MW (DC)	Total MW (AC)	Utility Purchased kWh	Utility Purchased $	Reported in E-16	Notes:

*Include any Qualifying Facilities (PURPA)

Cooperative								
Type	Size Category	# of Installations	Total MW (DC)	Total MW (AC)	Utility Purchased kWh	Utility Purchased $	Reported in E-16	Notes:

*Include any Qualifying Facilities (PURPA)

Independent Power Producer								
Type	Size Category	# of Installations	Total MW (DC)	Total MW (AC)	Utility Purchased kWh	Utility Purchased $	Reported in E-16	Notes:

*Include any Qualifying Facilities (PURPA)

Utility Backed Distributed Energy Resources - Community Projects

Instructions:
Report all utility backed/owned "community" DER projects such as community solar.
Report the type generating facility based on technology - e.g. Solar, Wind, Biogas, etc.
Report whether a facility is owned solely or partly by the utility, or whether the generating facility is owned by a third party.
For 2021, report actual figures from January 1 to September 20, 2019.
For 2022 and 2023 report forecasted values as known to the utility.
All 2019 data submitted for previous SEA represented 9 months of data and must be revised to reflect 12 months of data.
All 2020 data submitted in previous SEA represent a 12-month forecast and must be revised to reflect 12 months of actuals.
All 2021 data submitted in previous SEA represented 12-month forecast and must be revised to reflect 9 months of actuals (January 1 to September 30).
Nothing on this form is expected to be confidential

Year	System Name	County	Municipality	Ownership	Technology Category	Installation Size (kW)	Subscribed Capacity (kW)	Energy Production (kWh)	Subscribers (Customers)
2021	Alliant Energy Community Solar – Fond du Lac	Fond du Lac	Fond du Lac Township	Engie & Alliant Energy	Solar	1,000 kW (Community Solar owned by Engie) 245 kW (Customer Hosted owned by Alliant)	As of 10/11/21, 942.25 kW subscribed	As of 10/11/21, not operational	As of 10/11/21, 125 subscribers
2023	Alliant Energy Community Solar – TBD	TBD	TBD	Alliant Energy	Solar	1,000 kW			
2025	Alliant Energy Community Solar – TBD	TBD	TBD	Alliant Energy	Solar	3,000 kW			
2027	Alliant Energy Community Solar – TBD	TBD	TBD	Alliant Energy	Solar	1,000 kW			
2021	Alliant Energy Customer Hosted Solar – TBD	Sheboygan	City of Sheboyan	Alliant Energy	Solar	1,000 kW			
2021	Alliant Energy Customer Hosted Solar – TBD	Sheboygan	City of Sheboygan	Alliant Energy	Solar	2,250kW			
2021	Alliant Energy Customer Hosted Solar – TBD	Iowa	Dodgeville	Alliant Energy	Solar	300kW			
2023	Alliant Energy	Dane	Madison	Alliant Energy	Solar	17,000 kW			

PUBLIC VERSION

Demand Response Programs

Instructions:

1) Enter basic DR program information

Drop down option "Direct Load Control" refers to program where the utility has ability to control customer equipment (i.e., AC units)

Drop down option "Interruptible Load" refers to program where customers respond to utility notifications

Drop down option "Economic Event" refers to a program where DR events are driven by economic factors (i.e., high demand/high wholesale prices)

Drop down option "MISO Reliability Event" refers to a program where DR events are driven by system reliability concerns issued by MISO and/or the utility

Customer kW Limit refers to the maximum amount of individual customer load that may be enrolled in the DR program

Program kW Limit refers to the maximum cumulative capacity that may be enrolled in the DR program

Annual Event Limit refers to the maximum number of DR events that may be called in a given year (i.e., 50 per year)

Enter "N/A" in any cells that are not applicable to the program (i.e. if the program does not have a tariff sheet)

2) Enter annual data (where available) for demand-side DR customers

Provide historical data for at least 3 years if available. Data for more historical years would be helpful to reconcile long-term trends with this reporting format.

Demand Side Capacity (MW) refers to total program capacity where customers reduce load as opposed to offset load with behind-the-meter generation resources

Drop down includes DR compensation options of $/kW or $/kWh rate, $/kW or $/kWh discount from base rates, $/even and One Time Payment

Values should be the $/kW, $/kWh, $/event or One Time Payment amount disbursed to each participating customer during a DR event

3) Enter annual data (where available) for supply-side DR customers in Lines 20-25 of the "Schedule DR-1" tab

Provide historical data for at least 3 years if available, forward looking data is optional

Supply Side Capacity (MW) refers to total program capacity where customers offset load using behind-the-meter generation resources as opposed to load reduction

Complete other fields in the same manner as the demand-side section

*** Note: You may select "Not Applicable" for either Demand-side or Supply-side programs and leave all associated cells blank*

4) Provide Total Dispatch and Total DR Event data

Total Dispatch refers to the cumulative kW from all participating customers over the course of each year

Total DR Events refers to the number of unique DR notifications issued by the utility in each year (i.e., 25 out of a maximum event limit of 50 in 2019)

5) Repeat steps 1-4 if your utility operates more than one DR program

Multiple blank templates are available by scrolling to the right- fill out one for each program.

Program Title	C&I Interruptible	Tariff Name & Sheet	Interruptible Rider Sheet 7.60	Date Established	12/22/2016
Program Type	Interruptible Load / **If other please describe**	DR Event Criteria	Both Economic and Reliability Events / **If other please describe**		

Short Program Description: This interruptible rider is available to any customer on Rate Schedule Cp-1 or Cp-2 (R) with an On-peak Interruptible Demand of 200 kW* or greater who contracts for service in accordance with the provisions of this Rider. A measured On-peak Interruptible Demand of 200 kW or greater must be maintained for at least 6 of 12 months. All rates, terms and conditions of the Base Rate Schedule Cp-1 or Cp-2 are applicable unless otherwise specified in this Rider. Customers may contract for one On-peak Interruptible Demand option that coincides with the Base Rate Schedule that service is taken under and the interruptible notice response time option designated by the customer.

Total # of Customers Enrolled	130	Customer kW Limit	200 kW or greater	Program kW Limit	No upper limit	Annual Event Limit	No more than 50 hours for Economic events / No more than 150 hours for reliability events

		2014	2015	2016	2017 (Historical)	2018	2019	2020	2021 (Forecasted)	2022	2023	2024	2025	2026	2027
Total Capacity (MW)		0.00	0.00	0.00	146.00	146.00	146.00	146.00	138.00	138.00	138.00	0.00	0.00	0.00	0.00
Demand-side (MW)	Applicable														
Enrollment (# Customers)		0	0	0	130	130	130	130	130	130	130	0	0	0	0
DR Compensation Type (Select One)		$/kW rate	**Customers on the Interruptible program have a lower rate structure based on the schedule and their notifcation preference. The range is from $8.49 -$9.67 per kW. See comments below for further information**												
DR Compensation $ Value (marginal $/unit)		$0.00	$0.00	$0.00	Difference between Interruptible rate and standard rate: CP-1 $4.03-$4.92 CP-2 $3.90 - $4.76	Difference between Interruptible rate and standard rate: CP-1 $4.03-$4.92 CP-2 $3.90 - $4.76	Difference between Interruptible rate and standard rate: CP-1 $4.03-$4.92 CP-2 $3.90 - $4.76	Difference between Interruptible rate and standard rate: CP-1 $4.03-$4.92 CP-2 $3.90 - $4.76	Difference between Interruptible rate and standard rate: CP-1 $4.03-$4.92 CP-2 $3.90 - $4.76	Difference between Interruptible rate and standard rate: CP-1 $4.03-$4.92 CP-2 $3.90 - $4.76	Difference between Interruptible rate and standard rate: CP-1 $4.03-$4.92 CP-2 $3.90 - $4.76	$0.00	$0.00	$0.00	$0.00
DR Program Admin Costs ($/yr)		$0.00	$0.00	$0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$0.00	$0.00	$0.00	$0.00
DR Program Payments to Customers ($/yr)		$0.00	$0.00	$0.00	$12,000,000.00	$12,000,000.00	$12,000,000.00	$12,000,000.00	$12,000,000.00	$12,000,000.00	$12,000,000.00	$0.00	$0.00	$0.00	$0.00
Supply-side (MW)	<Select>				N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Enrollment (# Customers)		0	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	0	0	0
DR Compensation Type (Select One)		<Select>	**If other please describe**												
DR Compensation $ Value (marginal $/unit)		$0.00	$0.00	$0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$0.00	$0.00	$0.00	$0.00
DR Program Admin Costs ($/yr)		$0.00	$0.00	$0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$0.00	$0.00	$0.00	$0.00
DR Program Payments to Customers ($/yr)		$0.00	$0.00	$0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$0.00	$0.00	$0.00	$0.00

Comments: *CP-1 schedule and a one-hour notification receive $9.67/kW. Customers with a CP-1 schedule and an instantaneous notification receive $8.78/kW. Customers with a CP-2 schedule and a one-hour notification receive $9.35/kW. Customers with a CP-2 schedule and an instantaneous notification receive $8.49/kW. The standard Demand charge for CP-1 is $13.70/KW and for CP-2 $13.25/Kw NOTIFICATIONS are described as: One Hour – the customer must have the ability to curtail load to Contracted Demand Levels within one hour of receiving notification of an interruption. In practice the expectation is that Contracted Demand Levels compliance will occur in the fifth full 15minute interval following receipt of notification, unless specific interruptible event times are otherwise communicated as part of the interruption notification.*

Instantaneous – the customer must have the ability to curtail load to Contracted Demand Levels within ten minutes of receiving notification of an interruption. In practice the expectation is that Contracted Demand Levels compliance will occur in the second full 15-minute interval following receipt of notification, unless specific interruptible event times are otherwise communicated as part of the interruption notification.

	2014	2015	2016	2017 (Historical)	2018	2019	2020	2021 (Forecasted)	2022	2023	2024	2025	2026	2027
Total Dispatched (MW)				143	0	146	0	180	120 - 138 MW	121 - 138 MW				
(aggregate demand response dispatched)														
# of Dispatched Events				2	0	2	0	1	1-3	1-3				
(# of demand response events during the year, resources called upon)														

Comments: *The current tariff became effective 1/1/2017 - Volume III, 21st Revision, Sheet No. 7.60 Amendment 526, Schedule Cp-INT. The total capacity for the currenlty contracted customers in the interruptible program is ~138 MW of avaialble interrupt. Interruptions may occur under Reliability Interruption or Economic Interruption conditions as follows:*

i. Reliability Interruption will most likely occur when the company's firm power (R) commitments or portions thereof cannot be supplied after available capacity resources are exhausted, or because of forced outages of generating and transmission equipment, or localized disturbances on the company's transmission system. Interruptions will not be made to avoid operation of the company's available on-line generating units.

ii. Economic Interruption may be called for economic purposes when energy prices are expected to exceed a threshold price level expressed as the cost per kilowatt-hour of WPL highest -cost available generation resource.

There will be no more than 50 hours of Economic Interruption and no more than 150 hours of Reliability Interruption in a calendar year. Brief periods of interruption (periods that are less than 4 hours duration) shall be regarded as having lasted 4 hours, for purposes of limiting the total annual hours of interruptible utilization.

Interruptions due to lightning, wind and other causes other than intentional interruptions by the company shall not be considered in determining the hours of interruption or frequency.T

PUBLIC VERSION

Program Title	Smart Hours Residential DLC	Tariff Name & Sheet	WPL Rate Review 6680 UR 123 -Demand Response
Date Established	proposed 1/1/2022		
Program Type	Direct Load Control — via smart thermostats and water heater control	DR Event Criteria	Both Economic and Reliability Events — Residential DLC also includes temperature triggers
Short Program Description	WPL is partnering with a third party vendor to offer conrol of Smart THermostats and Water Heaters. WPL will call up to 15 events per year based on economic, supply or temperature triggers. Any event called will be Monday - Friday only and last only 4 hours in duration. Customers will still be able to opt out of an event by adjusting their thermostat during an event. Customers who elect to have Water Heater control will have a device installed on their water heater to limit heating during an event period. Qualified smart thermostat brands in the program are Nest, Ecobee & Emerson.		
Total # of Customers Enrolled	Program launches in 2022 with approval of PSC. Current goals are 3500 customers per year with smart thermostat control and 500 customers per year with water heater control	Customer kW l	Goal is ~1.0 kW per customer with smart thermostats and ~.4 kW per customer with water heater control
Program kW Limit	N/A	Annual Event Limit	15 per year

	Historical 2014	2015	2016	2017	2018	2019	2020	Forecasted 2021	2022	2023	2024	2025	2026	2027
Total Capacity (MW)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	8.00	0.00	0.00	0.00	0.00
Demand-side (MW) Applicable														
Enrollment (# Customers)	0	0	0	0	0	0	0	0	4000	8000	0	0	0	0
DR Compensation Type (Select One)	One Time Payment	Customers receive a one-time enrollment payment of $25 and a continuing payment of $25 for each cooling or heating season they continue to participate in the program												
DR Compensation $ Value (marginal $/unit)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
DR Program Admin Costs ($/yr)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$301,000.00	$226,000.00	$0.00	$0.00	$0.00	$0.00
DR Program Payments to Customers ($/yr)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$225,000.00	$350,000.00	$0.00	$0.00	$0.00	$0.00
Supply-side (MW) <Select>														
Enrollment (# Customers)	0	0	0	0	0	0	0	0	N/A	N/A	0	0	0	0
DR Compensation Type (Select One)	<Select>	If other please describe												
DR Compensation $ Value (marginal $/unit)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	N/A	N/A	$0.00	$0.00	$0.00	$0.00
DR Program Admin Costs ($/yr)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	N/A	N/A	$0.00	$0.00	$0.00	$0.00
DR Program Payments to Customers ($/yr)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	N/A	N/A	$0.00	$0.00	$0.00	$0.00

Comments: *Please see WPL Rate Review 6680 UR 123 -Demand Response*

	Historical 2014	2015	2016	2017	2018	2019	2020	Forecasted 2021	2022	2023	2024	2025	2026	2027
Total Dispatched (MW) *(aggregate demand response dispatched)*									Up to 4 MW per event	Up to 8 MW per event				
# of Dispatched Events *(# of demand response events during the year, resources called upon)*									1-15	1-16				

Comments: *This program will respond to MISO called events and also rely upon temperature triggers forecasted at 92-degrees or above for two consecutive hours.*

PUBLIC VERSION

Program Title | | Tariff Name & Sheet | | Date Established |

Program Type | <Select from Menu> | If other please describe | DR Event Criteria | <Select from Menu> | If other please describe

Short Program Description

Total # of Customers Enrolled | | Customer kW Limit | | Program kW Limit | | Annual Event Limit |

		Historical							Forecasted					
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Total Capacity (MW)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demand-side (MW) <Select>														
Enrollment (# Customers)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DR Compensation Type (Select One)	<Select>	If other please describe												
DR Compensation $ Value (marginal $/unit)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
DR Program Admin Costs ($/yr)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
DR Program Payments to Customers ($/yr)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Supply-side (MW) <Select>														
Enrollment (# Customers)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DR Compensation Type (Select One)	<Select>	If other please describe												
DR Compensation $ Value (marginal $/unit)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
DR Program Admin Costs ($/yr)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
DR Program Payments to Customers ($/yr)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Commen
ts

Provide additional background information for the demand response program including, but not limited to: annual program costs if available, rate time periods, historical and forecasted trends, etc.

		Historical							Forecasted					
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Total Dispatched (MW)														
	(aggregate demand response dispatched)													
# of Dispatched Events														
	(# of demand response events during the year, resources called upon)													

Comments

Provide additional background information for the demand response program including, but not limited to: criteria for calling an event,

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Program Title		Tariff Name & Sheet		Date Established	
Program Type	<Select from Menu> If other please describe	DR Event Criteria	<Select from Menu> If other please describe		
Short Program Description					
Total # of Customers Enrolled		Customer kW Limit		Program kW Limit	
Annual Event Limit					

		Historical							Forecasted						
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Total Capacity (MW)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demand-side (MW)	<Select>														
Enrollment (# Customers)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
DR Compensation Type (Select One)		<Select>	If other please describe												
DR Compensation $ Value (marginal $/unit)		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
DR Program Admin Costs ($/yr)		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
DR Program Payments to Customers ($/yr)		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Supply-side (MW)	<Select>														
Enrollment (# Customers)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
DR Compensation Type (Select One)		<Select>	If other please describe												
DR Compensation $ Value (marginal $/unit)		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
DR Program Admin Costs ($/yr)		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
DR Program Payments to Customers ($/yr)		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Comments

Provide additional background information for the demand response program including, but not limited to: annual program costs if available, rate time periods, historical and forecasted trends, etc.

	Historical							Forecasted						
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Total Dispatched (MW)														
	(aggregate demand response dispatched)													
# of Dispatched Events														
	(# of demand response events during the year, resources called upon)													

Comments

Provide additional background information for the demand response program including, but not limited to: criteria for calling an event,

PUBLIC VERSION

Program Title		Tariff Name & Sheet		Date Established	
Program Type	<Select from Menu> If other please describe	DR Event Criteria	<Select from Menu> If other please describe		
Short Program Description					
Total # of Customers Enrolled		Customer kW Limit		Program kW Limit	
		Annual Event Limit			

	Historical							Forecasted						
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Total Capacity (MW)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demand-side (MW) <Select>														
Enrollment (# Customers)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DR Compensation Type (Select One)	<Select>	If other please describe												
DR Compensation $ Value (marginal $/unit)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
DR Program Admin Costs ($/yr)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
DR Program Payments to Customers ($/yr)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Supply-side (MW) <Select>														
Enrollment (# Customers)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DR Compensation Type (Select One)	<Select>	If other please describe												
DR Compensation $ Value (marginal $/unit)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
DR Program Admin Costs ($/yr)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
DR Program Payments to Customers ($/yr)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Comments

Provide additional background information for the demand response program including, but not limited to: annual program costs if available, rate time periods, historical and forecasted trends, etc.

	Historical							Forecasted						
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Total Dispatched (MW)														
	(aggregate demand response dispatched)													
# of Dispatched Events														
	(# of demand response events during the year, resources called upon)													

Comments

Provide additional background information for the demand response program including, but not limited to: criteria for calling an event,

Wisconsin Power and Light Company
2021 Response to the
Public Service Commission of Wisconsin's
Strategic Energy Assessment Data Request
Docket No. 5-ES-111

Narratives to Schedules

Schedule 10 Conservation Data

Comprehensive Description of All Planned Activities to Discourage Ineffective and Excessive Electric Power Use

WPL provides customers with information, resources, and solutions related to energy efficiency, renewables, and sustainability. In addition to working collaboratively with the Focus on Energy Program, WPL offers voluntary efficiency programs designed to complement the statewide program and foster deeper energy savings and customer engagement. Our programs provide customers with insights related to their energy use to help inform decisions related to efficiency behaviors and investments. We also offer programs specifically targeting key customer segments, such as low- to moderate-income residential customers as well as non-managed commercial customers. Our internal corporate staff, including program management, community affairs, marketing, customer service, account management, economic development, and regulatory affairs, have increased engagement to support customers in understanding and controlling their energy use.

Coordination with Focus on Energy

Residential

WPL works collaboratively with the Focus on Energy program to maximize our residential customers' participation in Focus' offerings, through comprehensive annual marketing campaigns and limited time offers using a variety of channels including direct mail, email digital advertising and social media. WPL has also created enhanced website content and new landing pages communicating available Focus on Energy programs. Finally, WPL collaborated with Focus on Energy to deliver free LED packs to low- and moderate-income customers at community events.

Business

For businesses, WPL increased collaboration between Alliant Energy's Key Account Managers and assigned Focus on Energy advisors, sent seasonal direct mail to agriculture customers providing Focus on Energy program and incentive information tailored to their needs, and enhanced website content outlining technology specific incentives through Focus on Energy.

Voluntary and Customer Service Conservation Programs

Residential
WPL offers voluntary programming to help all customers understand their energy usage so that they can make well-informed choices as well as programs targeted to the needs of low-income customers. WPL's SENSE Whole Home Monitoring pilot program provides a SENSE Monitor to a targeted group of residential customers at no cost; those customers are also able to use the SENSE on-line app to view disaggregated energy data in real time. The goal of the SENSE pilot is to provide customers with information about how, when and where they are using energy and empower them to make efficient choices.

WPL also offers voluntary programs specifically designed to address the needs of low- and moderate-income residential customers. WPL implements a supplemental low-income weatherization program that provides customers additional financial support to make energy efficiency upgrades to their home beyond those supported by the federal level. WPL also funds several educational opportunities for customers.

Finally, WPL funds the educational KEEP program, which raises energy awareness and literacy in the next generation, and Alliant Energy's Powerhouse, a television and online video educational program designed to help customers improve the energy efficiency, safety, and comfort of their homes. WPL also has a digital and in-person education series in development with Slipstream. Sessions will be focused on weatherization and smart technology.

Business
For business customers, WPL broadened the Energy Advantage program, a high touch outreach program for non-managed small to medium C&I customers. Customers complete an Energy Assessment over the phone and are sent a customized report with their results. Through this program, WPL sends each participating customer energy use data, project recommendations, links to Energy Advisor information and incentives provided by the Focus on Energy. WPL also continues to fund and promote the Energy Edge portal for all C&I customers to analyze their energy use, find Energy Conservation Measures (ECM) to help lower energy costs, and link to Focus on Energy programs and incentives.

Finally, WPL offers industry and technology specific training and education courses, in partnership with Slipstream and monthly newsletters with customized content for all business customers. Newsletters include relevant industry trends, project recommendations, seasonal equipment optimization information, and links to assigned account managers or the business resource center team.

Schedule 11 New Transmission

Not applicable to WPL.

Schedule 12 Environmental Compliance

For each of the above Environmental Compliance Rules, describe what potential impacts are anticipated for your organization to meet forthcoming environmental regulations. Provide capital plan excerpts specific to the Environmental Compliance Rule.

Given the dynamic nature of environmental regulations, WPL monitors proposed rule revisions and changes to compliance requirements. To address this regulatory uncertainty, WPL will continue to assess its capital expenditure and operational plans for complying with various environmental regulations to consider potential changes and could make future updates as deemed necessary.

Coal Combustion Residuals (CCR) Rule

In April 2015, the EPA published the final CCR rule, which regulates CCR as a non-hazardous waste. This rule establishes minimum criteria for disposing of CCR in landfills and surface impoundments (ash ponds), and allows for continued operation of ash ponds if they meet certain location and performance criteria. Compliance with the final rule is specific for each ash pond and landfill. Individual ash ponds or landfills not meeting performance criteria must initiate corrective action or be subject to closure. WPL has ash ponds at Columbia that are subject to the CCR rule. In addition, WPL has two active CCR landfills at Columbia and Edgewater that are subject to the CCR rule.

EPA's final CCR rule became effective on October 19, 2015 and has been amended through several update rules. To comply with the rule's requirements and its updates, WPL has closed its ash ponds at Edgewater and has issued a notification of its intent to close its ash ponds at Columbia. In addition, WPL has undertaken studies for surface impoundment integrity, installed groundwater monitoring wells, implemented a groundwater sampling program and conducted evaluations of and modifications to designs for CCR landfills.

Effluent Limitations Guidelines (ELG)

The EPA signed the final ELG for steam-electric generating units on September 30, 2015. The ELG place limitations on steam-electric generating units, specifically eliminating the discharge of ash transport water and imposing limits on landfill leachate. WPL units affected by the ELG include Columbia Units 1 and 2. Compliance with this final rule will be specified in the facility's wastewater permit, but is generally expected to be completed by December 31, 2023. WPL has elected to convert to dry ash handling at Columbia, redirect the non-CCR wastestreams to other plant systems, and cease all waste streams to the Primary Ash Pond by October 31, 2022.

Cross-State Air Pollution Rules (CSAPR)

CSAPR is a regional nitrogen oxides (NO_x) and sulfur dioxide (SO_2) cap-and-trade program, where compliance may be achieved by purchasing emission allowances and/or reducing emissions through changes in operations or the addition of emission controls. CSAPR establishes state-specific annual NO_x and SO_2 emission caps and ozone season NO_x emission caps. The CSAPR ozone season includes NO_x emissions from May through September. Compliance with CSAPR began in 2015, with additional CSAPR emissions cap reductions beginning in 2017. Furthermore, additional CSAPR ozone season NO_x emission cap reductions for certain states began in 2021; however, Wisconsin was not impacted by this change. CSAPR emission allowances may be banked for future year compliance. WPL continues to monitor legal and regulatory developments related to CSAPR and expects to continue to meet the NO_x and SO_2 emissions compliance requirements based on continued operation of existing emission controls and banked emission allowances.

WPL Consent Decree

The 2013 WPL Consent Decree established various NO_x, SO_2 and particulate matter (PM) requirements for WPL's coal-fired units. At the time, these included the Columbia Generating Station (consisting of Units 1 & 2), the Edgewater Generating Station (consisting of Units 3, 4 & 5) and the Nelson Dewey Generating Station (consisting of Units 1 & 2). WPL has met and continues to meet the applicable Consent Decree requirements as detailed in semi-annual periodic reports filed with the plaintiffs.

One of the requirements of the WPL Consent Decree was to install a selective catalytic reduction (SCR) emission control system to reduce NO_x emissions at Columbia Unit 2 by December 31, 2018. In addition, WPL is required to maintain a 30-day rolling average NO_x emission rate of no greater than 0.080 lb/mmBTU and a 12-month rolling average emission rate of no greater than 0.070 lb/mmBTU at Columbia Unit 2. To maintain NO_x removal efficiency, WPL needs to periodically replace or add new SCR system catalyst layers. Specifically, a new 3rd layer of catalyst is planned to be installed at Columbia Unit 2 in 2022. Continued reductions in NO_x at Columbia Unit 2 will not only ensure continued Consent Decree compliance but will also continue to facilitate compliance with the CSAPR requirements.

Wisconsin Power and Light Company
2021 Response to the
Public Service Commission of Wisconsin's
Strategic Energy Assessment Data Request
Docket No. 5-ES-111

Responses to Supplemental Data Requests

Supplemental Data Request Response - Carbon Reduction Activities

The Commission first requested information on electricity providers carbon reduction activities in the SEA 2026 data request. The supplementary data request for SEA 2028 asks for updates to the information provided in the previous SEA, as well as some additional details designed to support effective analysis of carbon reductions at both the utility and statewide level.

A description of any carbon reduction goals established for the provider, which specifies:

- **The baseline year used for establishing the goal and the year (or years) in which certain reduction goals are to be reached; and**
- **The magnitude of the reduction goal, expressed as both a percentage and in million metric tons of CO_2 ($MMTCO_2$).**

WPL has not established separate voluntary carbon reduction goals specific to its operations. However, Alliant Energy Corporation (Alliant Energy) has established voluntary reduction goals that apply to its fossil-fueled electric generation carbon dioxide (CO_2) emissions from combined regulated utility operations, including both WPL and Interstate Power and Light Company (IPL). These CO_2 reduction goals have been established as part of Alliant Energy s broader Clean Energy Vision Goals and are shared publicly in our online Corporate Responsibility Report (CRR), viewable at https://alliantenergy.com/responsibility. More specifically, Alliant Energy's combined regulated utility (WPL and IPL) voluntary goals for transitioning to cleaner energy, including future CO_2 emissions reductions, are summarized below and are also publicly available at http://alliantenergy.com/crrgoals

Alliant Energy's Clean Energy Vision Goals
Successful execution of our strategy will enable us to achieve our clean energy initiatives. **By 2030:** Reduce our fossil fuel generation carbon dioxide (CO_2) emissions by 50% from 2005 levels Reduce our electric utility water supply by 75% from 2005 levels Electrify 100% of our company-owned light-duty fleet vehicles Partner to plant more than one million trees one tree for each of our utility customers

By 2040:
Eliminate all coal from our generation fleet

By 2050:
Aspire to achieve net-zero CO_2 emissions from the electricity we generate

We will continue to review and update our **Sustainable Energy Plan** and Clean Energy Vision, based on future economic developments, evolving energy technologies and emerging trends in the communities we serve.

The baseline year for Alliant Energy's voluntary CO_2 reduction goals is 2005. The annual emissions levels are established on a production basis. Therefore, any emissions attributable to energy market purchases and purchase power agreements (PPAs) are excluded.

WPL's CO_2 emissions for the 2005 baseline year, 2020 actual emissions, and the 2030 CO_2 reduction goal emissions are provided in the following table. This includes emissions from WPL's owned fossil-fueled electric generation units (EGUs). Emissions are adjusted on a heat input basis for the WPL generation share of joint-owned facilities. The source of the CO_2 emissions data includes continuous emissions monitoring systems (CEMS) and other air compliance data accepted by the U.S. Environmental Protection Agency (EPA).

Utility	2005 Baseline ($MMTCO_2$)	2020 Actual ($MMTCO_2$)	Actual % Reduction in 2020 (%)	50% Reduction by 2030 ($MMTCO_2$)
WPL	8.8	6.4	27%	3.2
Alliant Energy	**21.6**	**12.5**	**42%**	**10.8**

Alliant Energy's Clean Energy Vision Goals include eliminating all coal from our generation fleet by 2040. In February 2021, WPL announced retirement of Columbia Energy Center, enabling it to be coal-free by 2025.

Alliant Energy aspires to reach net-zero CO_2 emissions by 2050 for the electricity we generate. To accomplish this goal, we continue to explore options to eliminate, remove, and offset greenhouse gas emissions from our electric generation operations. Like other utilities, our company's path will be informed by new policies, emerging technologies, and economics. Throughout the clean energy transition, WPL will remain focused on providing affordable, safe, and reliable energy to the communities we serve. The technologies needed to achieve net-zero are continuing to evolve, including long duration storage, carbon-free generation, and carbon capture, usage, and storage. At this time, it is too early to predict which combination of technologies ultimately will be needed to achieve net-zero.

There are many perspectives on the impacts of climate change and the best path to decarbonization of the global energy system. Alliant Energy shares additional information on our company's strategic plans and pathway to achieve our Clean Energy Vision Goals online via the ***CRR Sustainability Management and Environmental, Social and Governance (ESG) Performance Summary*** available at: http://alliantenergy.com/**esgperformance**

Data specifying carbon emission levels on the provider s system in calendar year (CY) 2020, which permits clear analysis of progress to date towards any carbon reduction goals, in both percentage and $MMTCO_2$ terms. The system-wide CY 2020 data should be consistent with the facility-level data on 2020 CO_2 emissions provided in Schedule 8A, and the response to this supplementary data request should clearly explain how the system-wide totals can be reconciled with the facility-level data.

Please refer to the table above for the CY 2020 data, which is consistent with the WPL facility-level CO_2 data provided in Schedule 8A. Progress towards Alliant Energy's goal is based on the combined CO_2 emissions from both WPL and IPL.

Projected carbon emission levels on the providers system in CY 2022, CY 2024, CY 2026, and CY 2028, which specifies projected progress towards any carbon reduction goals in both percentage and in $MMTCO_2$ terms.

Alliant Energy's projected CO_2 emissions and percentage reductions relative to the company's Clean Energy Vision Goals are provided in the following table. This table includes the estimated potential percentage reductions for each individual electric utility.

	2005 Baseline	Projected ($MMTCO_2$)				Projected % Reduction			
Utility	**($MMTCO_2$)**	**2022**	**2024**	**2026**	**2028**	**2022**	**2024**	**2026**	**2028**
WPL	8.78	7.67	4.74	3.35	3.34	12.7%	46.0%	61.9%	61.9%
IPL	12.81	6.49	6.01	6.22	6.16	49.3%	53.1%	51.5%	51.9%
Alliant Energy	**21.60**	**14.16**	**10.75**	**9.57**	**9.50**	**34.4%**	**50.2%**	**55.7%**	**56.0%**
Notes: Table provides estimated annual WPL and IPL CO_2 emissions and potential reductions under the Continuing Industry Change case. Generation retirements and additions assumed are consistent with data provided in Schedule 7 and 8.									

A narrative explaining the anticipated causes behind projected changes in carbon emissions levels in each year for which data is provided. This narrative should address the relationship between changes in carbon emissions levels and the data submitted through the standardized SEA

schedules regarding unit retirements, new generating facilities, purchases, energy efficiency, demand response and DER. In specific, the narrative should explain in detail the impacts on projected emissions from generation additions and retirements, with reference to the 2020 facility emissions data provided in Schedule 8A.

Alliant Energy expects to continue meeting customer demand for electricity through a mix of electric supply, including owned electric generating units (EGUs), distributed energy resources, purchase power agreements (PPAs) and additional purchases from wholesale energy markets. Changes to the company's mix of electric supply include operation of WPL s West Riverside Energy Center, IPL s and WPL s additional wind generation, planned expansion of utility-scale solar generation and the proposed retirement and/or fuel switching of various EGUs. Long-term generation plans are intended to meet customer demand, reduce CO_2 emissions, reduce reliance on wholesale market purchases and mitigate the impacts of future EGU retirements while maintaining compliance with long-term electric demand planning reserve margins and reliability standards, existing and future potential environmental compliance requirements and renewable energy standards established by regulators.

Alliant Energy's environmental stewardship is focused on meeting its customers' energy needs in an economical, efficient, and sustainable manner. Our company proactively considers future environmental regulation or legislation in its planning, decision-making, construction, and ongoing operations activities. Alliant Energy is focused on executing a long-term strategy to deliver reliable and affordable energy with lower emissions independent of changing policies and political landscape. To achieve these long-term goals, Alliant Energy will transition away from coal-fired EGUs and incorporate more renewable energy, energy efficiency, and demand response. To balance these variable energy resources, WPL also continues to evaluate the deployment of energy storage and highly efficient natural gas-fired EGUs to assure reliable electricity supply for our customers.

WPL's projected emissions provided are based on modeling supporting resource plan filings submitted to the Public Service Commissions of Wisconsin (PSCW). The CO_2 projections are taken from the Continuing Industry Change modeling scenario, which assumes that the fleet evolution trends of the past decade continue, and utility emission reduction goals are achieved. The core inputs and drivers for this scenario include low gas prices competing with improvements in renewable technology costs. In addition, updates to the modeling were made to include WPL's announced retirement dates for Edgewater Unit 5 and Columbia Energy Center.

On a year-by-year basis, WPL s production of electricity and generation resource mix is expected to fluctuate due to participation in energy markets as well as obligation to supply reliable power to our customers. Therefore, variability of annual emissions is possible and initially the CO_2 emissions for WPL could decrease at a slower pace due to the incremental emissions from operating West Riverside Energy Center and utilization of remaining coal-fired EGUs while additional renewable resources are constructed. Over the long-term transition, Alliant Energy expects to achieve its CO_2 reduction goals through implementation of our Clean Energy Blueprint plans. Specifically, WPL's CO_2 emissions are expected to significantly decrease with the retirement of Edgewater Unit 5 by the end of 2022 and the retirement of Columbia Unit 1 and 2 by the end of 2023 and 2024, respectively.

Supplemental Data Request Response - Reliability Impacts of Potential Unit Retirements

> **The 2026 SEA data request also included a supplementary data request for the information providers solicit from MISO on the reliability impacts of potential unit retirements. . . .**
>
> **Providers must submit:**
>
> - **All documents associated with Attachment Y2 and Attachment Y filings submitted to or received from MISO in CY 2020 and CY 2021.**
> - **All documents submitted to or received from MISO associated with Attachment Y2 and Attachment Y filings regarding a retirement proposed to occur on a date within the SEA data collection period (CY 2019-CY 2028), to the extent those documents are not already identified through the first request.**

WPL was specifically requested through Data Request-PSC-Fontaine-3.03 in docket 5-ES-110 on November 9, 2020 to provide all documents associated with Attachment Y and Y2 filings that have been submitted to or received from MISO since WPL's response to the follow-up data request in December 2019. As a result, WPL submitted a response providing the requested data along with a total of four supplemental responses to this request. The most recent supplemental response in docket 5-ES-110 titled "WPL's 4th Supplemental Response to Fontaine 3.3 (ATTACHMENTS INCLUDED)" (PSC REF # 414059) was submitted on June 22, 2021. This fourth supplemental response provides all Attachment Y and Y2 filing information that has been submitted to or received from MISO since WPL's original response to the follow-up data request in December 2019 with references to all previous updates. No further Attachment Y and Y2 filings have been made since the June 22, 2021 update.

Table 1 provides a list of all WPL responses providing Attachment Y2 and Y related documents in docket 5-ES-110.

Table 1

PSC Ref	Description	Received Date
414059	WPL's 4th Supplemental Response to Fontaine 3.3 (ATTACHMENTS INCLUDED)	6/22/2021
411122	WPL's Supplemental Response to PSC-Fontaine-3.3	6/4/2021
404452	WPL's 2nd Supplemental Response to PSC-Fontaine-3.3	2/9/2021
400003	WPL's Response to PSC-Fontaine-3.03 Supplement	11/13/2020
395384	WPL's Response to Data Request PSC-Fontaine-3	8/14/2020

Supplemental Data Request Response - Utility Resource Planning

Providers must submit (as one or more documents) the following information:

A narrative description of the driving factors behind additions and retirements, including an explanation of the rationales for each retirement, and the role of new generation additions, as well as other considerations such as forecasted customer demand, in ensuring the utility meets future capacity and generation needs. This narrative should also explain the influence of utilities' carbon reduction goals on their decisions.

As described in more detail in WPL's Certificate of Authority ("CA") applications in Docket Numbers 6680-CE-182 and 6680-CE-183, WPL, with the support of Charles River Associates ("CRA"), engaged in a collaborative resource planning effort, known as the Energy Blueprint initiative, throughout 2019 to assess how WPL can best meet its customers' needs for energy that is affordable, reliable, flexible, and environmentally sustainable. As discussed in "WPL Energy Blueprint Technical Report and Reference Manual" (PSC REF#: 402513) ("Blueprint Reference Manual"), the initiative incorporated a structured process that involved data exchange, development of five MISO Market planning scenarios, an analysis of the existing fleet to evaluate a variety of potential retirement dates for Columbia Unit 1, Columbia Unit 2, and Edgewater Unit 5, a replacement analysis to evaluate a refined list of resource replacement options, and an integrated review of all tested portfolios to evaluate key tradeoffs against WPL's objectives. A copy of the Blueprint Reference Manual is submitted as **Confidential Attachment A.**

The Energy Blueprint concluded that a portfolio shift with early coal retirements and solar capacity additions would be beneficial for customers. Since the completion of the 2019 analysis, WPL has identified specific solar projects and coal retirement dates based on this analysis.

As described in more detail in Section 2 beginning on page 5 of the Blueprint Reference Manual, the first major step in establishing a functional modeling framework for the WPL Energy Blueprint analysis was to incorporate all WPL data into the Aurora model (a chronological market dispatch and portfolio accounting system). A calibration exercise was then performed with historical information and WPL's internal forecasts to ensure WPL meets future capacity and generation needs. CRA worked with WPL to first access and review all relevant WPL data associated with generation supply and demand and then to perform a series of model tests to validate proper calibration to actual observations.

The model set-up for WPL's supply resources involved development of unit operational parameters, cost characteristics, and specific contract details. Key inputs associated with generating resources in the Aurora model include:

- Nameplate capacity (or maximum dispatch capability) of the generating units (by month, as appropriate) and minimum capacity ratings;
- Maintenance schedules, defined as when a unit is temporarily taken offline for routine maintenance;

- Forced outage rates, or the percentage of time the resource is unavailable due to unscheduled outages;
- Ramp rates, minimum time a unit must be running if committed (“Minimum Up Time” in Aurora), minimum time a unit must be down after turning off (“Minimum Down Time” in Aurora), and assumptions about “Must Run” behavior, where a unit will be forced to always dispatch at least up to minimum capacity.
- Plant heat rates.
- Plant emission rates and water usage by generating unit.
- Startup costs and variable operating and maintenance costs.

Fuel price forecasts for the fleet along with distribution charges for natural gas plants were accounted for based on observed variable delivery costs and local distribution company (“LDC”) charges.

Demand forecasts were developed for the modeled time using several sources. First, monthly forecast of peak and average system load for the model period 2019 to 2048 inclusive of all energy sales and transmission and distribution losses. Second, the observed hourly WPL system load from the year 2015 was used to create an hourly demand profile to be used in conjunction with monthly peak and average load forecasts. WPL also reviewed monthly forecasts for MISO Coincident Peak, or the monthly system peak coincident with MISO’s system peak.

In addition to the owned and contracted generation resources in WPL’s portfolio, demand response (“DR”) resources also contribute to meeting system demand. Interruptible load is the portion of the utility’s load that can be curtailed in adverse conditions, such as high demand. WPL Interruptible services were modeled as DR resources in Aurora and are available to dispatch at a flat energy price. The maximum capacity at which this interruptible service could be deployed is included.

The portfolio modeling in Aurora was performed across five market scenarios to simulate WPL fleet dispatch, the interaction between the WPL system and the MISO market, ensuring WPL will meet future capacity and generation needs across a wide range of plausible future scenarios.

Finally, WPL’s carbon reduction goals were included as part of a larger scorecard evaluation that considered several important planning parameters – including sustainability – as shown in Figure 1 below.

Figure 1: Scorecard Evaluation Criteria

Criteria	Description
Customer Affordability	• Minimizing costs to WPL customers • **Metric:** Rate impact (5-year % CAGR) • **Metric:** Present value of revenue requirement (10-year and 35-year $)
Customer Rate Stability	• Evaluating sensitivity of resource plans to changes in market conditions • **Metric:** Rate certainty (Pooled interquartile range $ of 35-year NPVRR) • **Metric:** Rate risk (95th percentile $ of 35-year NPVRR) • **Metric:** Scenario resilience (Highest $/MWh scenario of 22-year NPVRR)
Maintaining Flexibility	• Balancing cost minimization with near- and long-term flexibility • **Metric:** Resource optionality (Avg. length of 2020-2040 commitments) • **Metric:** Operational flexibility (MW fast ramping 2030 capacity installed)
Maintaining Reliability	• Preserving a reliable portfolio in the context of changing market dynamics • **Metric:** Resource diversity (% of 2030 Alliant load served by technology) • **Metric:** Supply security (% of 2030 load served by owned, contracted)
Sustainability	• Reaching environmental goals • **Metric:** Carbon emissions (Reduction % Alliant CO_2 emissions 2030 vs. 2005) • **Metric:** Carbon emissions (lbs./MWh WPL fleet CO_2 emissions rate in 2030) • **Metric:** Water use (Reduction % WPL water withdrawn 2030 vs. 2005)

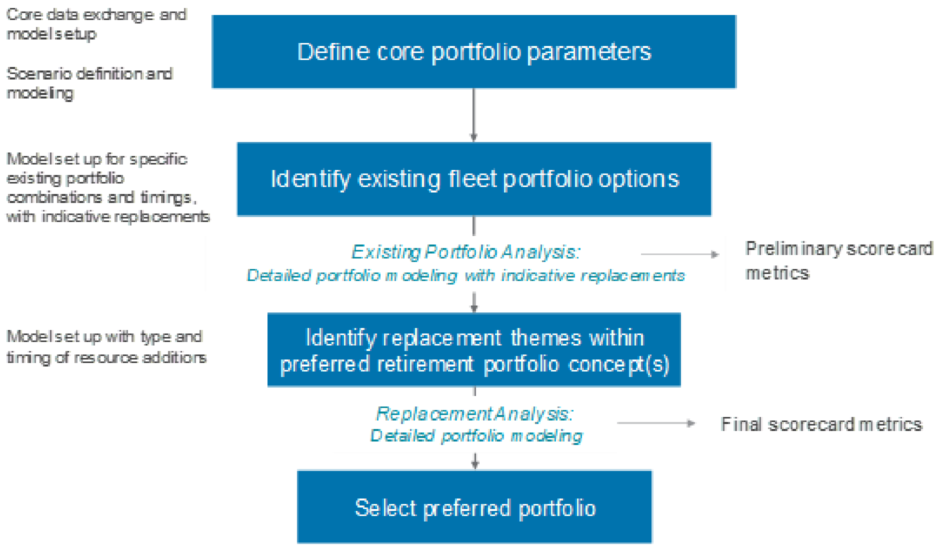
WPL's decisions regarding the retirements of Edgewater Unit 5, Columbia Unit 1 and Columbia Unit 2 were informed by the scorecard evaluation of the entire resource plan, which included generation retirements and resource additions. The retirements and resource additions identified through the Clean Energy Blueprint reduce customer cost, increase rate stability, maintain reliability and flexibility, and improve sustainability.

WPL's planning process continually evolves and reacts to changes in market conditions, regulatory environment, customer needs and preferences, and ongoing changes to the regional transmission system and generation mix. These changes, along with many others, result in a dynamic planning process that must be repeated over time. Each resource plan represents an incremental step in an ongoing process that strives to minimize customer cost while maintaining rate stability, reliability, flexibility, and sustainability over time.

An explanation of the analysis procedures used by the utility to determine addition and retirement decisions, including the analytical models used, the rationale for selection of those models, and the methods used by the utility to ensure accurate and reliable modeling results.

As described in more detail in Section 1 beginning on page 2 of the Blueprint Reference Manual, the core modeling process used included the major steps which are outlined in Figure 1.1

Figure 1.1 Planning Process Overview



Additional details for each element of this core planning process can be summarized as follows:

- **Model set-up and assumptions:** Tasks relating to setting up the model and assumptions included core data exchange and calibration around WPL's core portfolio, as well as definition and modeling of integrated market scenarios. The WPL portfolio calibration exercise included an extensive data exchange process of key portfolio parameters and key financial assumptions. The scenario development process included review of scenario concepts with WPL and significant fundamental modeling in Aurora.
- **Analysis framework**: While traditional resource planning processes for WPL relied on least cost expansion optimization analysis, the complexity of future portfolio choices and the multi-dimensional nature of the key decision metrics make such an approach untenable. As a result, the Energy Blueprint process introduced an analysis framework to evaluate both a wide range of options for existing resources and a wide range of replacement options against many different metrics associated with cost, risk, flexibility, reliability, and sustainability. This framework included separate operational and replacement analysis phases to allow for transparent review of the implications of several different strategies against all WPL's key objectives and metrics.
  - o **Operational analysis**: The operational analysis was conducted to identify preferred strategies to optimize use and treatment of existing resources over time. As part of this step, the WPL and CRA teams first defined a range of feasible operational pathways to allow for the evaluation of major tradeoffs across options,

especially associated with near-term costs, long-term costs, and environmental sustainability metrics. Such a tradeoff analysis could not be performed under a simple least cost expansion optimization analysis, which would typically focus only on the single metric of net present value of costs over a long-term planning horizon. As part of this phase, CRA performed detailed modeling to evaluate the performance of different portfolio strategies using indicative replacement capacity across an integrated scorecard of key metrics. This analysis established a short list of portfolio option candidates for further analysis.

  - **Replacement analysis**: The replacement analysis was then conducted to assess the performance of different capacity replacement alternatives under potential concepts for existing resources determined from the operational analysis step. A more expansive set of replacement alternatives was considered at this stage, and CRA conducted analysis to review the relative performance of the various alternatives against a wider range of metrics than would normally be evaluated in traditional portfolio modeling. This included evaluation with a stochastic-based risk analysis along with other analysis to record performance for a broad range of portfolio objectives.

- **Scorecard:** *Finally*, using the scorecard metrics, which are multi-dimensional, WPL reviewed each portfolio option for its potential to provide customers energy that is affordable, stable, flexible, reliable, and environmentally sustainable.

As noted earlier, the Aurora market model was the core portfolio dispatch tool used by CRA throughout the Energy Blueprint process. This model has similar functionality to tools that WPL has used in past resource planning exercises, such as EGEAS and PROMOD, but it offers additional flexibility and functionality.

A description of the goals and standards used by the utility to set initial parameters for modeling, which may include but should not be limited to its definition of standards for maintaining system reliability, required reserve margins for resource adequacy, and the application of utility carbon reduction goals.

As described earlier, the model set-up for WPL's supply resources involved development of unit operational parameters, cost characteristics, and specific contract details along with demand and energy forecasts. A minimum reserve margin requirement constraint of 7.9% was established across all model scenarios to ensure reliability and to meet the current MISO reserve margin requirements. The capacity accreditation for this calculation involved specifying reserve margin capacity values (Unforced Capacity or UCAP values) for all resources and contracts within the Aurora modeling framework, which varied by year for solar and paired solar and storage resources. Utility carbon reduction goals were not required to be met by the Aurora model but were considered in the evaluation of the selected resource plan.

A full description of the evaluation process and selection of the preferred resource plan can be found in Section 8 beginning on page 95 of the Blueprint Reference Manual.

Specification of the key input assumptions used to model system and market conditions, as well as any alternative assumptions used to conduct sensitivity analysis on the effects of different generation alternatives.

As described in more detail in Section 3 beginning on page 19 of the Blueprint Reference Manual, CRA worked with WPL to formulate assumptions around an initial reference case set of market drivers, called the "Continuing Industry Change" scenario. These market drivers relied heavily on Wood Mackenzie commodity price and technology cost forecasts, supplemented by CRA's MISO market model in Aurora. In addition to this scenario, CRA and WPL also developed four alternative scenario concepts, each attempting to evaluate a series of risks relevant to the Energy Blueprint process. The team aimed to develop a range of themes that would cover key risks and allow for a robust view of a range of potential market futures.

After defining the scenario concepts, CRA and WPL worked to translate the scenario themes into specific assumptions for the key inputs of load, carbon price, natural gas price, coal price, and capital costs for new resource options as shown in Figure 3.3 on page 21 of the Blueprint Reference Manual.

Specific description of all generation scenarios considered in analysis.

A complete listing and description of all generation scenarios considered in analysis can be found in Section 3 beginning on page 19 of the Blueprint Reference Manual.